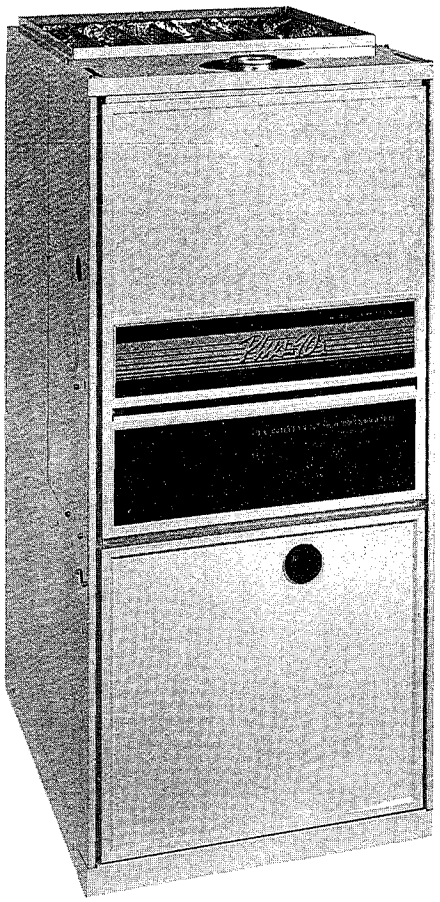
Bryant
Air Conditioning
Indianapolis, IN
City of Industry, CA

DELUXE ELECTRONIC CONDENSING GAS-FIRED FURNACE

Model 398BAZ

Sizes 060, 080, and 100
Series D



A91129

Building on our industry-leading condensing furnace technology, the Model 398BAZ Intelligent Heating Furnace is our greatest innovation in comfort control and operating efficiency.

Modern technology provides the Plus 90i design with great reliability, high efficiency, and ultra quiet operation. Efficiencies are up to 93.5% Annual Fuel Utilization Efficiency (AFUE). Direct vent, outside combustion air, and sealed combustion make this furnace the intelligent choice in home comfort control.

The Model 398BAZ, Plus 90i Condensing Gas-Fired Furnace incorporates the electronic intelligence of a microprocessor. The microprocessor control center interacts with a two-stage gas valve, an electronically-commutated inducer motor, and an integral control blower motor—allowing the Plus 90i to adjust combustion, temperature, and airflow to maintain peak efficiency throughout the operating cycle.

FEATURES

SEALED COMBUSTION (DIRECT VENT) SYSTEM—Enclosed burner assembly isolates operating noise without the expense of sound deadening devices. With the sealed combustion (direct vent) system, outdoor air is brought directly into the combustion chamber. This cuts cold air infiltration into the structure and reduces heat loss. As an added benefit, the sealed combustion (direct vent) system protects the furnace from corrosive chloride fumes given off by laundry products and other household chemicals inside the structure.

MONOPORT INSHOT BURNERS—produce precise air-to-gas mixture which gives a clean burn.

The large monoport on the inshot (or injection-type) burners seldom, if ever, needs cleaning.

FOUR-PASS HEAT EXCHANGERS—This design accelerates heat transfer and extracts heat that conventional heat exchangers waste up the flue. The primary heat exchanger is aluminized steel for corrosion resistance.

The Everlastic™ condensing heat exchanger is also a four-pass design. The sheet metal cells are laminated with polypropylene for greater resistance to corrosion and epoxy coated externally to prevent oxidation. This breakthrough in heating technology (Patent No. 4,738,307) helps extend the life of the furnace for years of trouble-free Plus 90i performance. The heat exchanger is positioned in the furnace to extract additional heat from the combustion products as they move through its four passes.

WARRANTY—Limited Lifetime Warranty on the heat exchangers for the lifetime of the original owner in a single family residence; 20 years in other residential and commercial applications. Your dealer has details. Five year warranty on microprocessor control.

COMBUSTION AIR AND VENTILATION—The 398BAZ design is so advanced that Schedule 40 PVC, PVC-DWV, SDR-21 PVC, SDR-26 PCV, ABS-DWV, or ABS-F628 Schedule 40 pipe can be used to bring outdoor air into the furnace for combustion. The extracted heat lowers the temperature of the combustion products (typically below 115 degrees F) to a point that PVC pipe can also be used for venting combustion products outside the structure. The combustion-air and vent pipes can terminate through a side wall or through the roof when using our approved vent termination kit.

SAFETY—The 398BAZ has three exclusive safety control features: (1) a self-checking draft control circuit that must reset before another burner cycle can begin, (2) a negative pressure condensate trap system that prevents combustion products from entering the drain system when the trap is not primed, (3) a self-checking ignition control circuit where a lockout occurs if pilot ignition is not proven after two attempts.

ELECTRONIC VARIABLE-SPEED MOTORS—Special motors provide variable-speed operation to improve the comfort levels in the home. They are also more economical to operate than standard motors. Motor and electronic controls are guaranteed by a 5-year Limited Warranty.

TWO-STAGE HEATING CAPACITY—On the coldest days of the year, the 398BAZ Furnace has the capacity to heat your home. For the moderate days when less heat is required, the "smart box" will regulate the heat to a lower capacity, providing a more comfortable home.

"SMART BOX," THE BRAINS OF THE SYSTEM—The microprocessor, called the "smart box," controls the Plus 90i to provide superior comfort. The "smart box" has these additional features:

- terminals for electrical connections and accessories
- adjustable blower off-time
- LED fault code display to aid in servicing
- dial-in cooling airflow
- emergency heat switch

Form No. PDS 398B.60.3B

- set switch to increase airflow for bypass type humidifier
- compatible with zoned air distribution systems

FULLY-INSULATED CASING—Foil-faced insulation in the heat exchanger section cuts heat loss; double-density insulation in the blower section reduces noise levels. The casing also has the required openings for left- or right-side connection of gas, electric, drain, and vent connections.

OLD FURNACE REPLACEMENT—The 46-3/16-inch casing height makes the Model 398BAZ Furnace ideal for replacement applications.

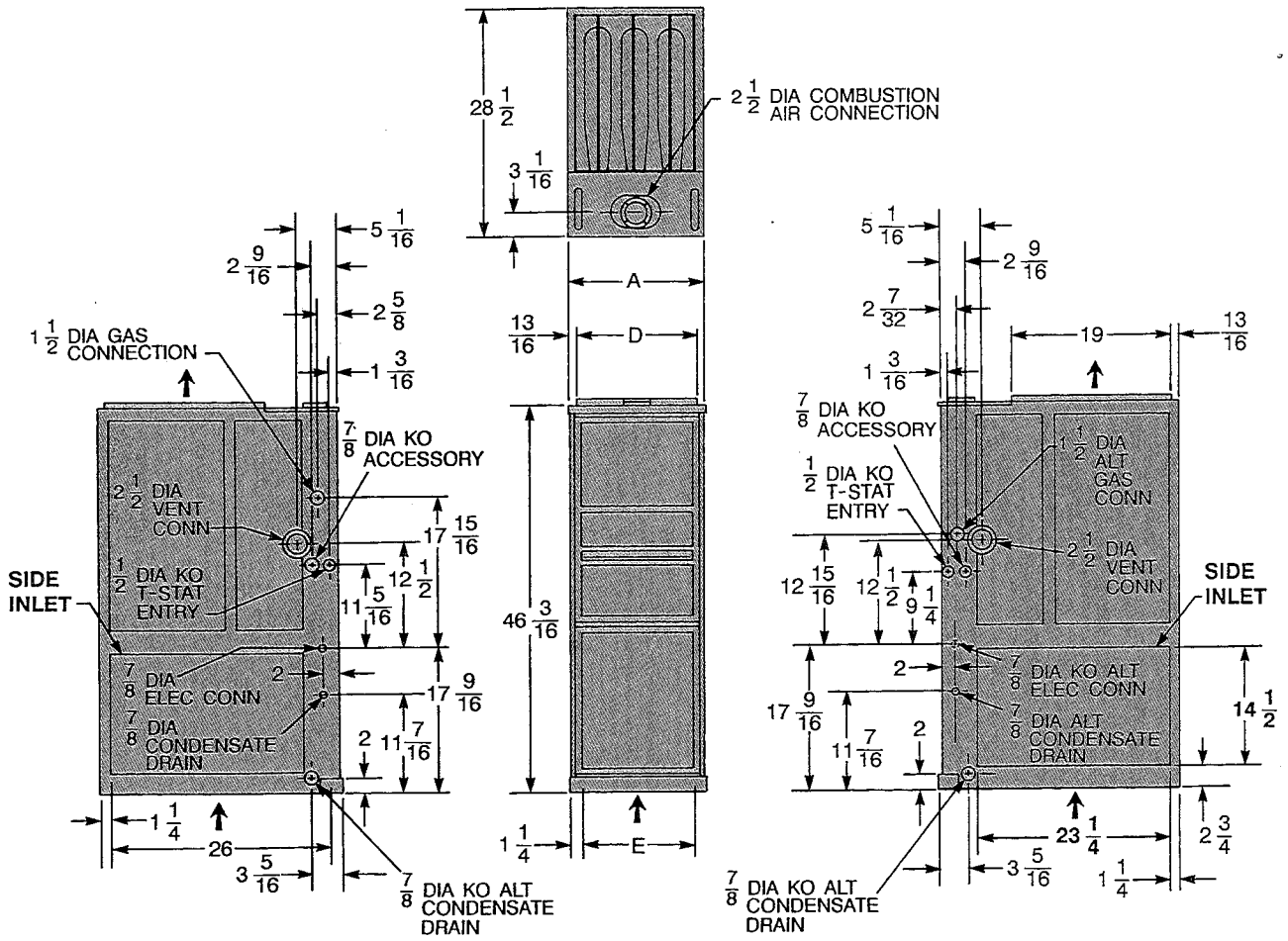
CERTIFICATION—The 398BAZ units are A.G.A. and C.G.A. design certified for use with natural and propane gases, as well as GAMA efficiency rating certified. The Model 398BAZ exceeds California minimum seasonal efficiency requirements by a wide margin, and meets the oxides of nitrogen (NO_x) emission levels set by South Coast and Bay Area Air Quality Management Districts in California.

DIMENSIONS (Inches)

SIZE	A	D	E	SHIPPING WT
060	17-1/2	15-7/8	15	182
080	17-1/2	15-7/8	15	195
100	21	19-3/8	18-1/2	237

CLEARANCES (Inches)

SIZE	060, 080, & 100
Sides	0
Back	0
Top of Plenum	1
Vent Connector	0
Front—Casing Ventilation	3
Service	30



A91099

MEETS DOE RESIDENTIAL CONSERVATION SERVICES PROGRAM STANDARDS.

Before purchasing this applicance, read important energy cost and efficiency information available from your retailer.

SPECIFICATIONS

SIZES		036060	036080	060100
RATINGS AND PERFORMANCE				
Input, Btuh* (Low/High)		43,500/63,000	58,000/84,000	72,500/105,000
Capacity Btuh† (Low/High)	ICS‡	41,000/59,000	55,000/79,000	68,000/99,000
AFUE %†	ICS‡	93.5	93.5	93.5
California Seasonal Efficiencies (CSE)†%		90.5	91.1	91.2
Certified Temperature Rise Range °F (Low/High)		70—80/55—65	70—80/55—65	70—80/65—75
Certified External Static Pressure	Heating	0.12	0.15	0.20
Inches Water	Cooling	0.50	0.50	0.50
Airflow, Cfm (Low/High)**	Heating	500/925	665/1235	835/1320
	Cooling	1200	1200	2000
ELECTRICAL				
Unit Volts—Hertz—Phase		115—60—1		
Minimum Wire Size, AWG		14		12
Maximum Wire Length (feet)††		44	44	44
Maximum Unit Amps		9.0	9.0	13.0
Operating Voltage Range Min—Max‡‡		104—127		
Maximum Fuse Size or HACR-Type Ckt Bkr Amps***		15	15	20
Transformer (24-V)		60VA		
External Control	Heating	16VA		
Power Available	Cooling	24VA		
Accessory Relay		Standard		
CONTROLS				
Limit Control		SPST		
Heating Blower Control		Microprocessor Time Operation 60—240 Seconds @ 20 Second Intervals		
Burners (Monoport)		3	4	5
Gas Connection Size		1/2-inch NPT		
GAS CONTROLS				
Gas Valve (Redundant 2-Stage)	Manufacturer	White-Rodgers		
	Minimum Inlet Pressure	4.5 inches wc (natural gas)		
	Maximum Inlet Pressure	13.6 inches wc (natural gas)		
Pilot	Model	740A		
BLOWER DATA				
Direct-Drive Motor HP—Type		1/2—ICM	1/2—ICM	1—ICM
Motor Full Load Amps		7.0	7.0	12.0
RPM (Nominal)—Speeds		Variable 300—1300		
Blower Wheel Diameter x Width, Inches		10 x 7	10 x 7	11 x 10
Filter Size—Permanent Washable, Inches		15-7/8 x 27-3/4 x 1		
DEALER-INSTALLED OPTIONS				
Side Filter Rack †††		316280-701 (Permanent, Washable Filter Size 16 x 25 x 1)		
Return Filter Cabinet		316279-701 (Permanent, Washable Filter Size 2—20 x 25 x 1)		
Gas Conversion Kit—Natural-to-Propane		318053-70101		
Gas Conversion Kit—Propane-to-Natural		318053-70201		
Vent Terminal Kit		2-inch—315841-701 3-inch—315841-702		
Side-Wall Vent Termination Cover		2-inch—310355-701 3-inch—310355-702		

* Gas input ratings are certified for elevations to 2000 feet. For elevations above 2000 feet, reduce ratings 4% for each 1000 feet above sea level. In Canada, from 2000 to 4500 feet above sea level, derate the unit 10%.

† Capacity and AFUE in accordance with U.S. Government DOE test procedures. California Seasonal Efficiencies based on California-specified procedures.

‡ ICS—Isolated Combustion System.

** Air delivery above 1800 cfm requires that both sides, or a combination of one side and bottom, or bottom only, of the furnace be used for return air. A filter is required for each return-air supply.

†† Length shown is measured one way along wire path between unit and service panel for maximum 2% voltage drop.

‡‡ Permissible voltage limits for proper furnace operation.

*** Time-delay fuse is recommended.

††† Side filter rack is required for right-side return air installations.

MAXIMUM ALLOWABLE COMBUSTION-AIR AND VENT PIPE LENGTH (Feet)

ALTITUDE (FEET ABOVE SEA LEVEL)	FURNACE SIZE	PIPE SIZE (INCHES)	NUMBER OF 90°ELBOWS					
			1	2	3	4	5	6
0 to 2000	036060	2 2-1/2	70 70	70 70	70 70	70 70	60 70	55 70
	036080	2 2-1/2	50 70	50 70	40 70	35 70	35 70	30 70
	048100	2 2-1/2* 3	20 70 70	15 65 70	10 55 70	10 50 70	5 45 70	5 40 70
2001 to 3000	036060	2 2-1/2	62 61	61 61	61 61	60 60	51 60	46 59
	036080	2 2-1/2	44 62	43 61	34 61	29 60	29 60	23 59
	048100	2 2-1/2* 3	17 62 62	12 57 61	7 48 61	6 42 60	0 38 60	0 32 59
3001 to 4001	036060	2 2-1/2	57 57	56 56	55 55	54 54	45 53	40 52
	036080	2 2-1/2	40 57	39 56	30 55	25 54	24 53	18 52
	048100	2 2-1/2* 3	15 57 57	10 53 56	0 43 55	0 37 54	0 33 53	0 27 52
4001 to 5000	036060	2 2-1/2	53 53	52 52	51 51	50 50	41 49	37 48
	036080	2 2-1/2	37 53	36 52	27 51	23 50	22 49	16 48
	048100	2 2-1/2* 3	13 53 53	9 49 52	0 40 51	0 34 50	0 30 49	0 24 48
5001 to 6000	036060	2 2-1/2	49 49	47 47	46 46	44 44	35 43	31 41
	036080	2 2-1/2	34 49	32 47	23 46	19 44	18 43	11 41
	060100	2 2-1/2* 3	11 49 49	7 45 47	0 37 46	0 29 44	0 25 43	0 19 41
6001 to 7000	036060	2 2-1/2	45 45	43 43	42 42	40 40	32 39	28 37
	036080	2 2-1/2	31 45	29 43	20 42	17 40	16 39	9 37
	048100	2 2-1/2* 3	10 45 45	6 41 43	0 33 42	0 26 40	0 23 39	0 16 37
7001 to 8000	036060	2 2-1/2	41 41	39 39	37 37	35 35	26 33	22 31
	036080	2 2-1/2	27 41	25 39	17 37	13 35	11 33	0 31
	060100	2 2-1/2* 3	8 41 41	0 37 39	0 28 37	0 21 35	0 18 33	0 11 31
8001 to 9000	036060	2 2-1/2*	36 36	34 34	32 32	30 30	22 28	19 26
	036080	2 2-1/2	24 36	22 34	14 32	11 30	9 28	0 26
	048100	2 2-1/2* 3	6 36 36	0 33 34	0 25 32	0 18 30	0 15 28	0 8 26
9001 to 10,000	036060	2 2-1/2	32 32	29 29	26 26	23 23	16 20	13 17
	036180	2 2-1/2	21 32	18 29	10 26	7 23	5 20	0 17
	048100	2-1/2* 3	32 32	29 29	21 26	13 23	10 20	0 17

*Remove one combustion-air disk for this application.

NOTES:

1. Size both the combustion-air and vent pipe independently, then use the larger diameter for both pipes.
2. Assume two 45° elbows equal one 90° elbow. Long radius elbows are desirable and may be required in some cases.
3. Elbows and pipe sections within the furnace casing and at the vent termination should not be included in vent length or elbow count.
4. The installer may use one larger pipe size than what is specified above (up to 4 inches diameter maximum).
5. The minimum pipe length is 5 feet for all applications except for the 060-size models with 2-inch pipe and one elbow which have a 10-foot minimum pipe length.

AIR DELIVERY—Cfm*(With Filter)

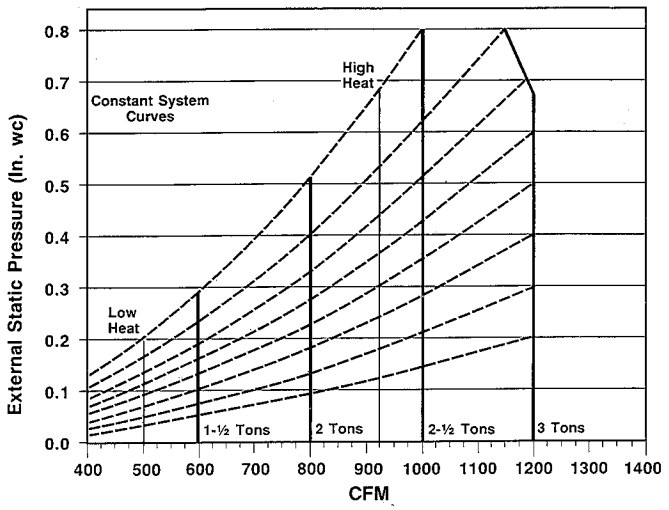
AIRFLOW CFM		OPERATIONAL EXTERNAL STATIC PRESSURE RANGE* WC
398B036060		
Low Heat	500	0—0.20
High Heat	925	0—0.68‡
1-1/2 Ton A/C Setting	600	0—0.28†
2 Ton A/C Setting	800	0—0.51†
2-1/2 Ton A/C Setting	1000	0—0.80
3 Ton A/C Setting	1200	0—0.68
398B036080		
Low Heat	675	0—0.35
High Heat	1240	0—0.60
1-1/2 Ton A/C Setting	600	0—0.29†
2 Ton A/C Setting	800	0—0.50†
2-1/2 Ton A/C Setting	1000	0—0.80†
3 Ton A/C Setting	1200	0—0.68†
398B060100		
Low Heat	835	0—0.32
High Heat	1320	0—0.80
2 Ton A/C Setting	800	0—0.30†
2-1/2 Ton A/C Setting	1000	0—0.46†
3 Ton A/C Setting	1200	0—0.67†
3-1/2 Ton A/C Setting	1400	0—0.80
4 Ton A/C Setting	1600	0—0.80
4-1/2 Ton A/C Setting	1800	0—0.75
5 Ton A/C Setting	2000	0—0.50

* Actual external static pressure can be determined by using the fan laws (cfm² proportional to ESP); i.e., a system with 925 cfm at 0.5 ESP would operate at cooling airflow of 800 cfm at 0.37 ESP and low-heating airflow of 500 cfm at 0.15 ESP. (See fan curves.)

† Ductwork must be sized for high-heating cfm within the operational range of external static pressure.

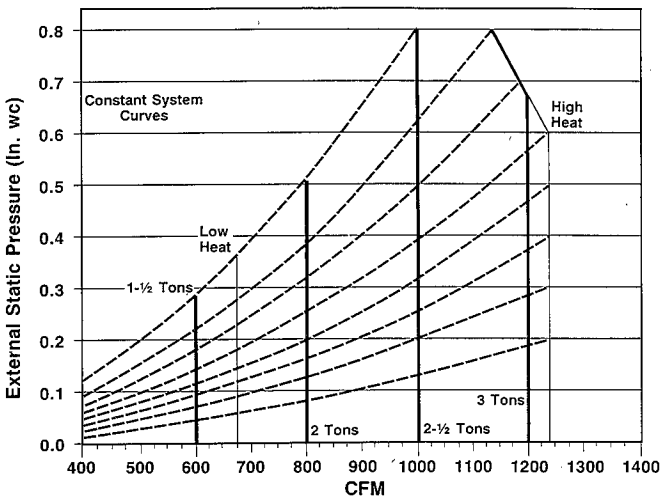
‡ 0.8 in. wc when used with an 18,000 or 24,000 Btuh air conditioner.

AIR DELIVERY CURVE—036060



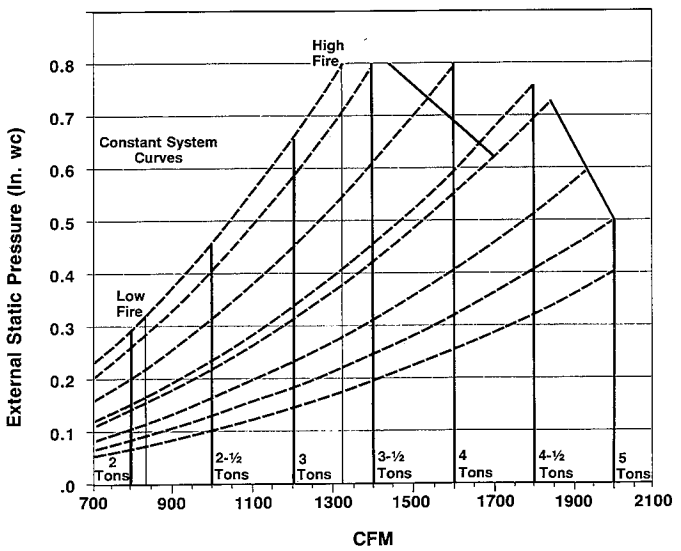
A89372

AIR DELIVERY CURVE—036080



A89373

AIR DELIVERY CURVE—060100



A89375

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

UNIT MUST BE INSTALLED IN ACCORDANCE
WITH INSTALLATION INSTRUCTIONS

bryant

Bryant
Air Conditioning

Indianapolis, IN

© 1991 BDP Co. Indpls, IN 46206 PRINTED IN U.S.A.

Catalog No. BY-3239-805 11-91